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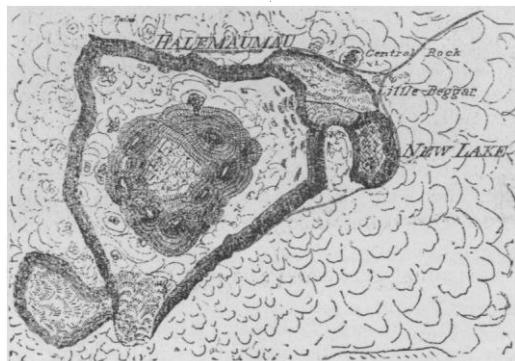
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year came from Kilauea. The best authorities, like Dutton, agree that the Kabuku flow came from Mauna Loa, while Kilauea overflowed in the Kau desert. The area of the flow is only about a quarter of a mile in length and breadth.

It is worthy of note that after the eruptions of 1823, 1840, and 1886, the returning lava has stood at nearly the same level. That of 1823, described by Ellis, is estimated by Dutton to have been 400 feet lower than at the time of his visit. Reducing the figures to a uniform standard reference to the sea-level, the altitude in 1823 was 3,177 feet; in 1840, 3,170 feet; in 1886, 3,140 feet, or the lowest point. In 1882 the level of New Lake was estimated at 3,577 feet. The highest level of March 6 was at 3,719 feet. It appears, therefore, that there has been no essential change in the normal natural level of the molten lava for the past sixty-five years.

By advices sent as late as the middle of October, it appears that the central cone has risen 700 or 800 feet above the lowest level of the pit, and it is still rising. Small streams of lava issue, play around, and harden between the central cone and the walls of the pit; so that the old Halema'uma'u is being restored (fig. 3).

During the months of September and October Professor Alexander employed parties to make a further survey and map of the great caldera. The result is given in the annexed map after the sur-



HALEMA'UMAU IN OCTOBER, 1886.

veys of F. S. Dodge. The earlier map of Emerson was based upon the sketch of W. T. Brigham, made in 1866, and any general changes of outline observed are due to the greater precision of Dodge's survey. One observes differences in the northern wall, the straightening of the cliff in front of Kilauea-Iki, the more satisfactory representation of the two side-craters, and the location of the promontory at the old sulphur-beds. Halema'uma'u itself shows changes between these two latest

maps. Instead of the deep pit in the centres 900 feet below the Volcano House, there is a circular ridge nearly 600 feet above that lowest point. The lava which commenced to flow June 4 has continued to discharge ever since, and has now built up this crater. There is a sort of moat between the crater and the black ledge surrounding it as well as the central pit within. There is represented also an interesting patch of Aa to the north of Halema'uma'u.

C. H. HITCHCOCK.

PARIS LETTER.

IN a paper recently read before the Biological society of Paris, Dr. Debierre gave the results of researches concerning the physical superiority of the right side of the human body. Since the experiments of Harting, Sappey, Jobert, Concret, Milne-Edwards, and others, it has been generally accepted that in right-handed persons the right side is larger, longer, and heavier than the left side. To ascertain whether this disparity exists in early life, or is afterwards developed by education, Dr. Debierre experimented upon the dead bodies of young children, and found that, where education and practice had not interfered, there was no difference in size or weight between the right and left limbs. This is well, so far as it goes, but there must be some reason for the superior development by education of the right side. Even if we admit that education is the only reason for this superiority, we must believe that some circumstances in the foetal development, or in the conditions governing the nervous centres, are favorable to it, as it is so general, unless we believe that the first man was by special design created right-handed. But this belief I think no naturalist would accept.

As a consequence of the troubled international relations on our continent, — a state of affairs prejudicial to thought and business alike, and which will end some day in a tremendous crash and most foolish and unprofitable waste of human energy and life, — chemists are busily engaged in seeking improved methods of destruction. In France a new explosive has been devised, said to be as much superior to nitro-glycerine as the latter is to common gunpowder. It is called 'melinite,' and its explosive force is to that of gunpowder as 100 to 5. Its destructive effects are fearful, inasmuch as bombs charged with it do not explode immediately upon striking a wall, or similar resisting surface, the explosion taking place some little time after penetration. This new war material is the invention of MM. Locard and Hiron-dard of Bourges, to whom the minister of war has given an order for 200,000 bombs charged with

it. In Germany a new shell has been devised, on principles made known some years ago by M. Turpin, a French inventor. In this new projectile two substances, one of which acts as igniter and the other as combustible, are placed close to each other, but not in contact. The igniter is contained in a glass bottle, which is broken by the shock caused by the striking of the shell, thereby permitting the two substances to come into contact and causing the explosion at the desired moment. Neither of these substances is dangerous in itself, and either may be handled separately without risk. The projectiles are not charged with the igniting substance until they are to be used. A third new explosive has been invented in Berlin. It is called 'roburite,' and has given good results, but it is dangerous to handle, and is said to deteriorate more or less rapidly after manufacture.

Miss Klumpke, whom I mentioned in my last letter as having competed for the *internat* of the Paris hospitals, has been successful, passing as number 16, the whole number of competitors being about 600. She is an American, from San Francisco. Another American lady has been appointed *interne provisoire*, to be on duty only in case supplementary *internes* are necessary and for one year instead of four.

As I stated in my last letter, female students are pretty numerous in Paris. Most of them are Russians, generally very poor, so they club together in small sets, — many of them have brothers or husbands with them who are students also, — and put their resources into a common fund. One room is used as dormitory, another as study, etc., and a single cook does for all, — phalansterism as proposed by Fourier. They work hard, and the life of all, men and women, is very respectable in every way.

At a recent meeting of the Biological society a paper on paralytic rabies in man was read by M. Gamaleïa, a physician of Odessa, and director of the Russian antirabic inoculation institution in that city. One of M. Peter's main assertions in his discussion with Pasteur is that paralytic symptoms are met with only in rabbits and in cases of experimental hydrophobia; genuine hydrophobia, according to M. Peter, being always convulsive. M. Gamaleïa shows that such is not the case, and gives the records of sixteen cases of paralytic rabies witnessed by himself. The symptoms induced by this sort of hydrophobia are as follows: ataxy, paresis, and paralysis of the legs and arms, sensibility being unimpaired (at the outset, at least); lumbar pains, shooting from the back forwards; paralysis of the abdominal and rectal muscles. The paralysis gains ground, invading the neck, tongue, and face, and finally asphyxia sets

in. Among the causes which seem to co-operate in inducing the paralytic form of rabies, M. Gamaleïa notes especially the penetration of a large quantity of virus. This certainly was the case with the patients who died after submitting to Pasteur's intensive method.

The government report on fisheries for 1885 has just been published. The fishing vessels of all descriptions number 23,877, manned by 85,915 men. There are also 57,088 fishermen who fish along shore. The total weight of fish taken was 187,000,000 kilograms, valued at 92,736,585 francs. There has been a complaint for some years past of the increasing scarcity of sardines. These fish seem to stop in the neighborhood of the Spanish and Portuguese coasts, not going much farther north. The deaths among the fishermen for the year mentioned number 363, leaving 212 widows and 416 orphans. Were it not for the high freights charged by the railroads for the transportation of fish, the fisheries would be much more prosperous than they are, the high freights preventing the development of new markets. This is especially the case with oysters. In Brittany, for instance, oysters are so very abundant that at present they sell at nine francs per thousand, while in Paris they sell at fifty francs, owing to the high price of transportation and the local duty.

The telephone experiments which recently took place between Paris and Brussels were very satisfactory. The line was opened to the public some days ago, when a lively chat took place between the invited guests of the minister of posts and telegraphs, and those of the post-director of Brussels. Within the city the wire is inclosed in wooden tubes enveloped by a leaden tube. For the rest of the distance it is an ordinary aerial line, the wire being of siliceous bronze, — the same wire being used for both telegraphic and telephonic purposes. The tariff for five minutes' conversation between Paris and Brussels is three francs.

Some days ago Professor Alglave, the able director of the International scientific series, in France, delivered an interesting public lecture on alcoholism. He stated that of one hundred insane persons, forty had been intemperate; that fully one-half our criminals had been in the habit of drinking to excess, and that delirium tremens kills 2,200 persons every year. The reason for the increase in the death rate of alcoholic patients is not that there are a greater number of victims, but that alcoholic liquors are much more poisonous than formerly, owing to their poorer quality and the addition to them of inferior alcohol made from rice, potatoes, corn, beets, etc. Of 1,872,000

hectolitres of alcohol consumed annually, scarcely 25,000 hectolitres are pure ethylic alcohol made from grapes, — and other alcohols are real poisons, as may easily be shown. To kill an animal it requires about 7 grams of ethylic alcohol per kilogram of the animal's weight, while of amylic alcohol it requires only about 1 gram. To produce death in a man of 80 kilograms weight, it would require 620 grams of the pure alcohol, but only 88 of the other. Alcoholism is therefore produced seven times sooner with the latter than with the former.

It is now fifty years since the first railroad was built in France, and the fiftieth anniversary is being celebrated in the Bois de Vincennes. But the railroad companies prefer to wait and celebrate this anniversary during the exhibition of 1889, so it is likely that the present celebration will be a failure.

At a recent meeting of the Academy of sciences, M. Hayem of the medical school read a paper on the phenomena noticed in the head of an animal after decapitation, with or without transfusion of fresh blood. As soon as the head is separated from the body the eyes move convulsively, and a look of wonder and anxiety is noticeable on the face. The jaws separate with force, and the tongue seems to be in a tetanic state. There appears to be some consciousness of what is going on, but this does not last more than three or four seconds. The eyes then shrink into the head, and some spasmodic efforts at breathing are made ; the nostrils expand, the mouth opens, the tongue is retracted towards the fauces. This respiratory effort is repeated three or four times, but the senses seem to be inactive, and the will is lost. These phenomena last one or at most two minutes, and the head then becomes utterly inert. If preparations have previously been made so that the head after separation continues to receive a fresh supply of blood, the voluntary manifestations persist as long as the blood supply is sufficient, — that is, for half an hour or so. When a blood-supply is furnished after the head has become entirely motionless, the phenomena are as follows : some contractions, very weak and feeble, take place, especially in the muscles of the lips ; then some respiratory efforts ; reflex actions of the eye, first weak, then well marked, but the eyelids remain drooping ; the senses are quite asleep, and no will is manifested. Of course, the longer the period between decapitation and the restoration of blood supply, the longer the time before these phenomena are apparent. In conclusion, it may be assumed that decapitation does not produce instantaneous death. Conscious life and feeling continue for a few sec-

onds. Whether or not pain is felt during this brief period cannot be ascertained, most likely not, owing to the rapid death of nervous elements, with which alone sensation is concerned.

M. J. Schoenfeld has recently devised an ingenious method of written communication between blind persons and those who can see. Instead of printing the letter *p*, for instance, in relief as in other systems, a combination of pointed projections or stops, — as we will call them for convenience, — is used. These stops are of conical form, such as may be produced upon one side of a piece of paper by pressing lightly upon the other side with a sharply pointed pencil. The number of stops used is six, arranged in two parallel columns of three each, thus ::, and numbered consecutively from one to six, 1, 2, and 3 running down the first column, and 4, 5, and 6 down the second. In this system the letter *o* is represented thus ::, and *r* thus ::, — and as these signs are in relief they may be read as well by the eye as by the touch. The letter *o*, as we perceive, is a combination of the stops numbered 1, 3, and 5, — 2, 4, and 6 being omitted. The letter *r* is composed of the stops numbered 1, 2, 3, and 5 ; and so on, each letter being represented by a different combination of two or more of the stops. By the aid of a list of all the combinations used and of the letters to which they correspond, this system is easily learned, and it may be as easily read by the blind as the relief print now used.

A very useful though little known laboratory in Paris is that devoted to anthropometry, as applied to the identification of criminals. It is popularly called the 'Feet-bureau.' The reason for this peculiar name will be found farther on. In this laboratory every criminal, when taken into custody, is submitted to a thorough anthropometrical examination. He is divested of all clothing, and the form and dimensions of his head, face, fingers, feet, body, etc., are accurately noted down, and his face is photographed. There is already a collection of some sixty thousand photographs, and how can any particular photograph in this large collection be quickly found when required ? This is the way M. Bertillon, the able director of the bureau, has classified them, so that he can readily find a photograph by which to identify any criminal whose picture is in the collection. The photographs are divided into three groups, according to the age of the criminal. Each of these groups is subdivided into three classes, according to the height of the person. A further subdivision of these classes is based upon the length of the head, and a final subdivision is governed by the length of the feet, — hence the name 'feet-bureau.' By this arrangement any desired picture among the

sixty thousand may be found in a moment, and on the back of it is a complete record of the criminal's past life, together with an accurate description of him. The bureau is very serviceable, the criminals being the only ones who find any fault with its workings.

An interesting paper upon the physiological action of saccharine—discovered some years ago by Fahlberg—has been contributed by MM. Aducco and Mosso. They find that frogs cannot live in a solution of this substance, on account of its acidity, though strong doses of a concentrated solution of it do not seem to affect them. Upon dogs, saccharine has no definite action. The weight of the animals is not changed by its use, and it has no effect upon the quantity or quality of the urine voided. Chlorides seem to be ejected in greater proportion, but this is all. Saccharine passes through the body without change, its only effect being to render the urine less putrescible than usual. Upon man the effects are similar, five-gram daily doses having no effect whatever, passing away wholly with the urine, entirely unchanged. Upon the whole, saccharine seems to be an inoffensive substance, having the valuable quality of being a substitute for sugar without the injurious effects of the latter in certain ailments, such as diabetes.

An excellent work upon hygienic dietetics has recently been published by M. Dujardin-Beaumetz, in which he ably reviews previous works upon the physiology of digestion, and advances sound ideas of what dietetics must be as governed by the various states of health and disease. Another work, by M. Dangeard, upon the inferior organisms, will prove useful to zoölogists and botanists. It is a book of reference concerning a very small division of protozoa, but contains no general ideas upon physiology or morphology.

V.

Paris, Feb. 11.

GEOGRAPHICAL NOTES.

Africa.

The European population of Algiers in 1886 numbered 261,500 French and 210,000 foreigners. Among the latter the Spanish element is the most numerous. As among the French population there are 38,000 soldiers, and about a thousand foreigners are naturalized every year, the foreigners actually outnumber the French. The European population has doubled during the last twenty-five years, and the native population, which numbers 3,300,000 Arabs and Kabyles and 43,000 Israelites, is increasing at a rate of about 80,000 a year. Since 1881 the increase was 423,000.

Stanley publishes a letter in which he states

that all the political authorities and experts in Cairo are opposed to the idea of his taking the Kongo route for reaching Emin Pasha. As his expedition will be well armed, they do not consider the obstacles he would find on the Karagwé or Masai route insuperable. Stanley, however, wishes to avoid a struggle with Uganda, as he fears that the missionaries now in Mwanga's power will be murdered in case of war. He estimates the length of the Kongo route at 157 days,—twenty days by steamer from Zanzibar to the Kongo, three days by steamer on the Lower Kongo, thirty-five days on the Upper Kongo, and ninety-nine days of land journey to Lake Mwootan. The Karagwé route he calculates at 156 days land journey, the Masai route at 154 days.

No news has been received of Mr. Lüderitz, who went on an exploring expedition in southwestern Africa last fall. He has not been heard of since he embarked on the Orange River in a canoe.

Dr. E. Holub's party has been attacked by the Bechuanas, and his companion was killed in the fight. Holub escaped unhurt. After the news of this disaster was received, a committee was formed in Vienna to raise funds for enabling Dr. Holub to resume his explorations on the upper Zambezi.

The French are making use of their occupation of Madagascar, says *Nature*, to gain a thorough knowledge of the natural history of the island. There have already issued from the national press several fascicules of a magnificent 'Histoire physique, naturelle, et politique de Madagascar,' edited by M. Alfred Grandier, to be completed in thirty volumes quarto. The subjects to be comprised in this work are: 1°, physical and astronomical geography; 2°, meteorology and magnetism; 3°, ethnology, anthropology, and linguistics; 4°, political, colonial, and commercial history; 5°, natural history of mammals; 6°, natural history of birds; 7°, natural history of fishes; 8°, natural history of reptiles; 9°, natural history of Crustacea; 10°, natural history of terrestrial and freshwater mollusks; 11°, natural history of plants; 12°, geology and paleontology. The various sections are intrusted to competent authorities; and the geological portion is to be illustrated by about five hundred chromo-lithographs or colored plates, the anatomical details being represented in lithography and photography. The total number of plates will not be less than 1200.

America.

Mr. Chaffanjon was going to leave San Fernando de Atabapo on the Upper Orinoco in November, 1886, to explore the sources of that river. Through the support of the government he got